

Application No. 10/026,387
Filed: 12/21/2001
Attorney Docket No.: 7161-23U

DESCRIPTION OF THE INVENTION

The Applicants have invented a new and non-obvious method, system and apparatus for decentralized many-to-many relationship management. In the many-to-many relationship management system of the Applicants' invention, links which traditionally manage the objects in a one-to-one and one-to-many relationship, also can manage the related objects in a many-to-many relationship. Specifically, the links can collaborate with one another by providing updates to the junction table without the assistance of a non-application, auxiliary relationship manager. *Notably, unlike conventional many-to-many relationship management systems in which a centralized relationship manager manages the junction table, in the present invention, the responsibility for maintaining the junction table can be distributed amongst the links.*

Each of the links in the many-to-many relationship management system of the present invention can have an association with an object as the persistence manager for that object and, as such, can be considered an application entity. In consequence, the persistent state information managed by each link can be stored to and retrieved from data storage using the conventional flush and hydration mechanisms of pre-existing conventional object persistence management systems. Thus, by eliminating the need for a centralized relationship manager, the complexity of managing many-to-many relationships can be dramatically reduced.

Finally, inasmuch as a conflict of flush and hydration operations can arise on opposite sides of a many-to-many association, a counter-operation process can be provided in accordance with the present invention. The counter-operation process can be performed in each of the links in the many-to-many relationship prior to the persistence of object states managed by each side of the many-to-many association. Specifically, prior to performing individual flush and

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hydration operations wherein the state of the managed objects are written to or deleted from their associated object tables, each managing link can inspect its own operational buffer and the operational buffer of the another to locate operations in both which run counter to one another. Where identified, these operations can be removed from the buffer without performing the corresponding individual flush or hydration operation. In this way, potential conflicts within the many-to-many relationship can be avoided.

DESCRIPTION OF THE CITED ART

Kawai relates to a method and apparatus for modifying existing relational database schemas to reflect changes made in a corresponding object model. In Kawai, an object model includes semantic objects that represent items about which data is stored in a relational database in a computer system. Each semantic object has one or more components that define the data stored for each item. The object model is mapped into a current relational database schema. In this regard, as a user applies changes to the model the computer system generates a proposed relational database schema, and the differences between the current relational database schema and the proposed relational database schema are determined. The relational database further is modified to reflect changes made in the corresponding object model based upon the differences between the current and proposed relational database schemas.

Olson, by comparison, relates to a relational database information management system for facilitating normalization of a relational database. In Olson, a computer system that incorporates a SQL type relational database is adapted to enterprises in which human performance is to be managed. There is a single table that contains linking information for multiple entity relationships among a plurality of information entities. Programs that cooperate